

Allowable Subject Matter

Claims 3-12 and 35-39 are objected to as being dependent upon a rejected base claim, but would be allowable if re-written in independent form to include the limitations of the rejected base claim and any intervening claims.

Claim 1 is amended to include language similar to that recited in allowed Claim 3, and therefore is now allowable over the cited references.

Claims 2, 4-18, and 20 depend from Claim 1, and therefore distinguish over the cited references for at least the same reasons as Claim 1.

Claim 35 is re-written in independent form to include the limitations of base claim 34, and therefore is now allowable over the cited references.

Claims 36-39 depend from Claim 35, and therefore distinguish over the cited references for at least the same reasons as Claim 35.

Amendments to correct clerical errors

The element "controller" recited in Claims 1, 13, 21, 23, and 27 is changed to "control circuit." Also, the element "finite state machine" recited in Claims 13 and 14 is changed to "controller." These claim amendments correct clerical errors, and are not narrowing amendments made for patentability purposes.

Rejection of Claims under 35 USC §112, first paragraph

Claims 21-33 are rejected under 35 USC §112, first paragraph, as failing to comply with the enablement requirement. The Examiner indicates that the recitation of "a controller for generating the tuning range control signal and the reset signal in response to a plurality of reference voltages and a mode signal" in Claim 21 is "not enabled by the present specification

because with such limitations, as recited above, it is not understood how the instant invention can perform the claimed function "generating the tuning range control signal."

In response thereto, Claim 21 is amended to recite "a control circuit for automatically generating the tuning range signal in response to a comparison between the control voltage and a plurality of reference voltages." For example, the control circuit of Claim 21, which for some embodiments may include a comparator 352 and a digital controller 354 as shown in Applicant's FIG. 3, compares the control voltage V_{ctrl} with the reference voltages V_H and V_L to generate compare signals CMP, which in turn are used to generate the tuning range signals TRS. The language recited in amended Claim 21 is enabled by Applicant's specification at paragraphs [0023], [0024], and [0036].¹

1 Paragraph [0023] provides, in relevant part: "Control circuit 350 includes a comparator 352 and a digital controller 354. Comparator 352, which is well-known, includes inputs to receive V_{ctrl} , an upper limit voltage signal V_H , and a lower limit voltage signal V_L ...Comparator 352 compares V_{ctrl} to V_L and V_H , and in response thereto generates compare signals CMP_{up} and CMP_{dn}."

Paragraph [0024] provides, in relevant part: "Digital controller 354 includes inputs to receive the CMP signals, the voltage control signal V_{ctrl} , a lock detect signal LD, and one or more mode select signals MS...As described in detail below, digital controller 354 generates the tuning range control signals TRS in response to its input signals CMP, LD, and MS."

Paragraph [0036] provides, in relevant part: "If V_{ctrl} drops below V_L , comparator 352 asserts compare signal CMP_{dn} (e.g., to logic high), which in turn instructs controller 354 to select the next lower tuning range. Thus, for this example, asserting CMP_{dn} causes controller 354 to set TRS[0,1] = 01 which, as indicated above, selects the lower tuning range 501 by enabling switches SW0 and SW1 to connect both C0 and C1 across C_{offset} . Also, the assertion of CMP_{dn} instructs controller 354 to assert (e.g., to logic high) the reset signal RST, which in turn causes loop filter 330 to reset V_{ctrl} to V_M ."

Thus, because Applicant's specification provides an enabling description of Claim 21's recitation of "a control circuit for automatically generating the tuning range control signal in response to a comparison between the control voltage and a plurality of reference voltages," Claim 21 is now in compliance with the enabling requirement of 35 USC §112, first paragraph. Accordingly, Applicant respectfully requests the Examiner to withdraw the present rejection of Claim 21.

The present amendment of Claim 21 incorporates language similar to that recited in original Claim 23, and therefore does not introduce new subject matter and does not necessitate a new search by the Examiner.

Claim 22 is amended to recite that "the reset signal is generated in response to the comparison between the control voltage and the plurality of reference voltages." This limitation finds enabling support in paragraph [0036] of Applicant's specification, the relevant portion of which is quoted above with respect to Claim 21. Therefore, Claim 22 is in compliance with 35 USC §112, first paragraph.

The present amendment of Claim 22 incorporates language similar to that recited in original Claim 21, and therefore does not introduce new subject matter and does not necessitate a new search by the Examiner.

Rejection of Claims 13-19 under 35 USC §112, second paragraph

Claims 13-19 are rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The Examiner indicates that Claim 13 is indefinite because the recited recitation "a finite state machine having first inputs to receive the compare signals, and first outputs to

generate the one or more tuning range control signals in response to the compare signals" is "misdescriptive because the finite state machine (604 in instant Fig. 6) does not generate the one or more tuning range control signals (TRS) to the VCO (340 in instant Fig. 3) as recited in the claim, but rather generates the shift signals (SH_up, SH_dn) to the counter (606)."

As indicated above, Claim 13 is amended to correct a clerical error, and now recites "a controller having first inputs to receive the compare signals, and having first outputs to generate the one or more tuning range signals in response to the compare signals" (emphasis added for clarity). For example, as illustrated in Applicant's FIG. 3, controller 354 has first inputs to receive the compare signals CMP from comparator 352 and has first outputs to generate the one or more tuning range signals TRS. Support for Claim 13 may be found, for example, in paragraphs [0023] and [0024] of Applicant's specification. Accordingly, because Claim 13 is now in compliance with 35 USC §112, second paragraph, Applicant respectfully requests the Examiner to withdraw the present rejection of Claim 13.

The Examiner indicates that Claim 18 is indefinite because the recited recitation "a multiplexer having a first input to receive the counter signal, a second input to receive the one or more mode signals, a control terminal to receive a logic combination of the one or more mode signals, and an output to provide the tuning range signals to the VCO" is "misdescriptive because the multiplexer (608 in instant Fig. 6) does not generate the tuning range signals (TRS) to the VCO (340 in instant Fig. 3) as recited in the claim, but rather generates the control signals (GC) to the decoder (612)."

In response thereto, Claim 18 is amended to include the decoder originally recited in Claim 19, and now recites, in relevant part:

a multiplexer having a first input to receive the counter signal, a second input to receive the one or more mode signals, a control terminal to receive a logic combination of the one or more mode signals, and an output; and

a decoder having an input coupled to the output of the multiplexer and having an output to provide the tuning range signal to the VCO.

Accordingly, Claim 18 is now in compliance with 35 USC §112, second paragraph, and therefore Applicant respectfully requests the Examiner to withdraw the present rejection of Claim 18.

As indicated above, Claim 18 is also amended to recite "a finite state machine" so that Claim 18 more closely corresponds to the architecture of the exemplary embodiment illustrated in Applicant's Fig. 6. The element "finite state machine" is recited in original Claim 27, and therefore amending Claim 18 to recite the "finite state machine" does not constitute new subject matter and does not necessitate a new search by the Examiner.

Rejection of Claims 21-33 under 35 USC §112, second paragraph

Claims 21-33 are rejected under 35 USC §112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. The Examiner indicates that the omitted element is "the control voltage (V_ctrl in instant Fig. 3) as input signal to the controller 350)."

In response thereto, Claim 21 is amended to recite "a control circuit for automatically generating the tuning range signal in response to a comparison between the control voltage and a plurality of reference voltages" (emphasis added for clarity). As amended, Claim 21 is now in compliance with 35 USC §112, second paragraph, and therefore Applicant respectfully

requests the Examiner to withdraw the present rejection of Claim 21.

Rejection of Claims under 35 USC §102

Claims 1, 2, 20, and 34 are rejected under 35 USC §102(b) as anticipated by U.S. Patent No. 5,696,468 to Nise.

Claim 1 has been amended to recited language similar to that originally recited in allowed Claim 3, and therefore Claim 1 is now patentable over the cited references.

Claims 2, 4-18, and 20 depend from Claim 1 and therefore distinguish over the cited references for at least the same reasons as Claim 1.

Claim 34 is canceled, and therefore its rejection is now moot.

Claims 21-33

Claim 21 is amended to recite "a control circuit for automatically generating the tuning range signal in response to a comparison between the control voltage and a plurality of reference voltages," and thus includes language similar to which the Examiner has indicated in paragraph 11 of the Office Action as distinguishing over the cited references. Therefore, Claim 21 is now patentable over the cited references.

Claims 22-23, 25-28, and 30-33 depend from Claim 21 and therefore distinguish over the cited references for at least the same reasons as Claim 21.

CONCLUSION

In light of the above amendments and remarks, it is believed that Claims 1-2, 4-18, 20-23, 25-28, 30-33, and 35-39 are in condition for allowance and, therefore, a Notice of Allowance of Claims 1-2, 4-18, 20-23, 25-28, 30-33, and 35-39 is respectfully requested. If the Examiner's next action is other than allowance as requested, the Examiner is requested to call the undersigned at (415) 379-6143.

Respectfully submitted,



Dated: February 14, 2005

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313 on February 14, 2005.



By: _____
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